

# Condensed Matter Physics

Module No.: MN-P-SP-CondMat, MN-P-PN-CondMat, MN-P-WaMa

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## Course: Solid State Spectroscopy

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Category	Type	Language	Teaching Hours	CP	Semester
Specialized Course	Lecture	English	2	3	

### Requirements for participation:

Basic knowledge of condensed matter physics

### Type of module examinations:

One oral examination at the end of the module

### Duration of the course:

1 semester

### Aims of the course:

Spectroscopy is crucial for the understanding of novel materials. This lecture aims to give an introduction to some of the important methods that have been established over the last years. It covers the basic concepts and techniques of optical and electron spectroscopic techniques. The course also contains examples from recent research breakthroughs that have been achieved using spectroscopic techniques.

### Contents of the course:

Topics covered are:

- Light sources
- Spectral analysis of light
- Model dielectric functions
- Optical spectroscopy (absorption, infrared spectroscopy, Raman)
- Applications of group theory to spectroscopy
- Photoelectron spectroscopy

### Recommended literature:

Kuzmany: Solid-State Spectroscopy: An Introduction (Springer, 2009)

S. Hüfner: Photoelectron Spectroscopy Principles and Applications (Springer, 1996)

Joachim Stohr: NEXAFS Spectroscopy (Springer, 1996)